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(54) **QUICK SPINNER THREAD ALIGNMENT APPARATUS AND METHOD**

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(51) **Int. Cl.**

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B65H 49/28	(2006.01)
B65H 49/32	(2006.01)
B65H 57/04	(2006.01)
D05B 43/00	(2006.01)

(52) **U.S. Cl.**
CPC ***B65H 49/26*** (2013.01); ***B65H 49/28*** (2013.01); ***B65H 49/324*** (2013.01); ***B65H 57/04*** (2013.01); ***D05B 43/00*** (2013.01)

(58) **Field of Classification Search**
CPC B65H 49/26; B65H 49/28; B65H 49/324; B65H 57/04; D05B 43/00
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

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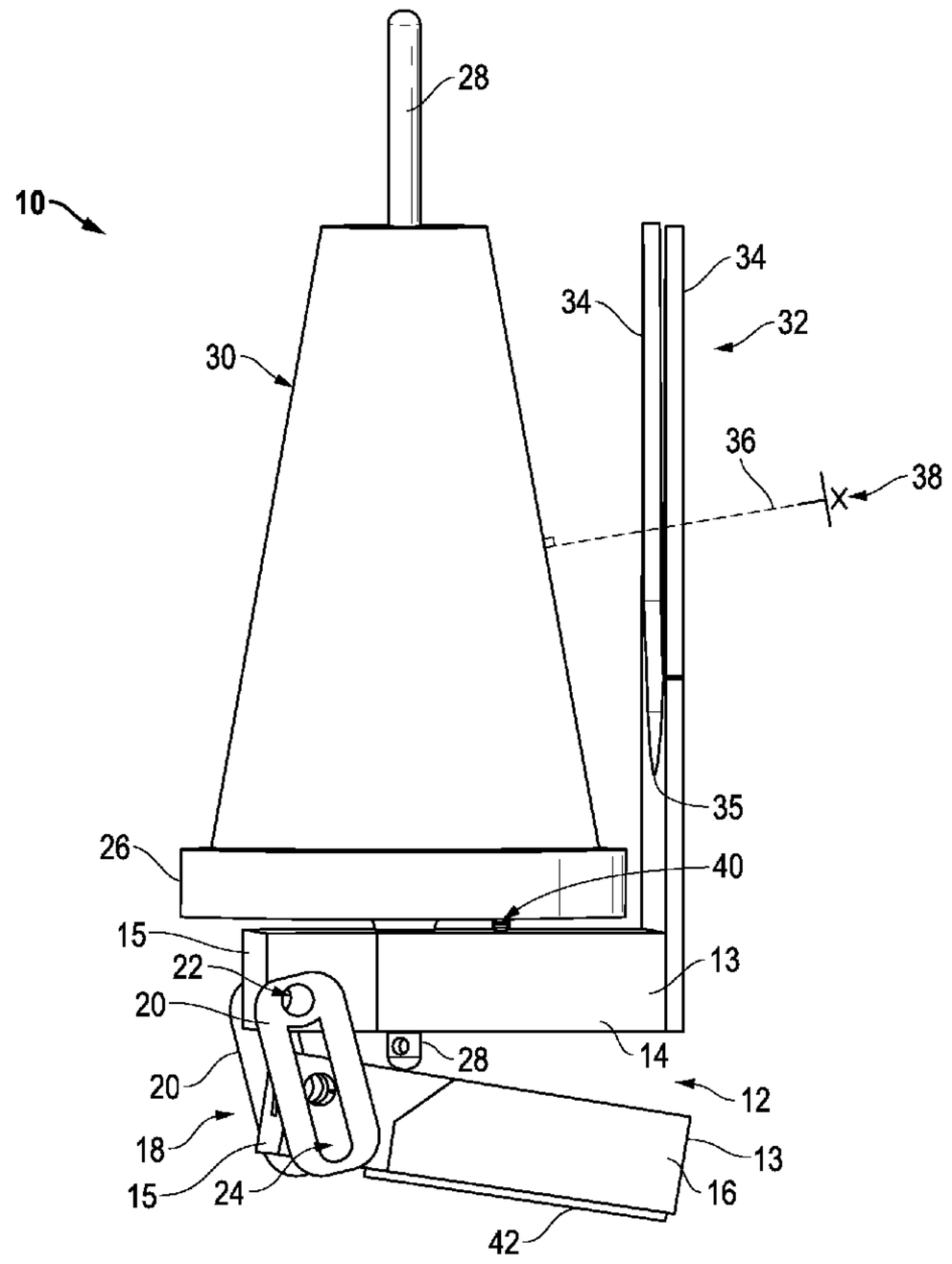
(57) **ABSTRACT**

A quick spinner thread alignment apparatus consists of a two part adjustable mounting block comprised of an upper block and a lower block. An angle adjustment device is connected to the upper block and the lower block where the angle adjustment device adjustably secures the upper block at selected angles relative to the lower block. A thread support disk is rotatably connected with the mounting block. A thread saver is connected with the mounting block. A thread pole is connected with the thread support disk and a brake is connected with the thread support disk and the mounting block.

20 Claims, 2 Drawing Sheets



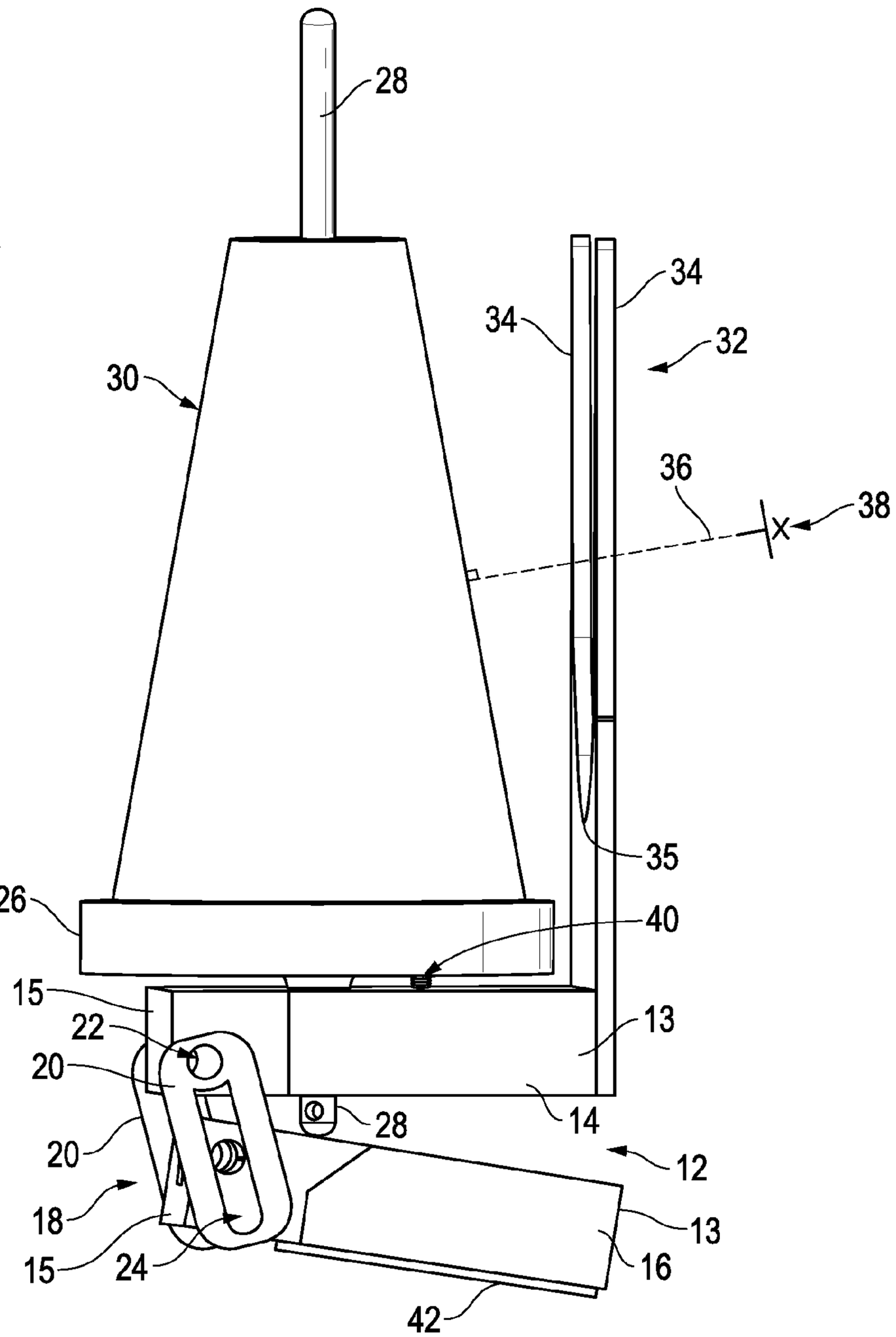

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FIG. 1

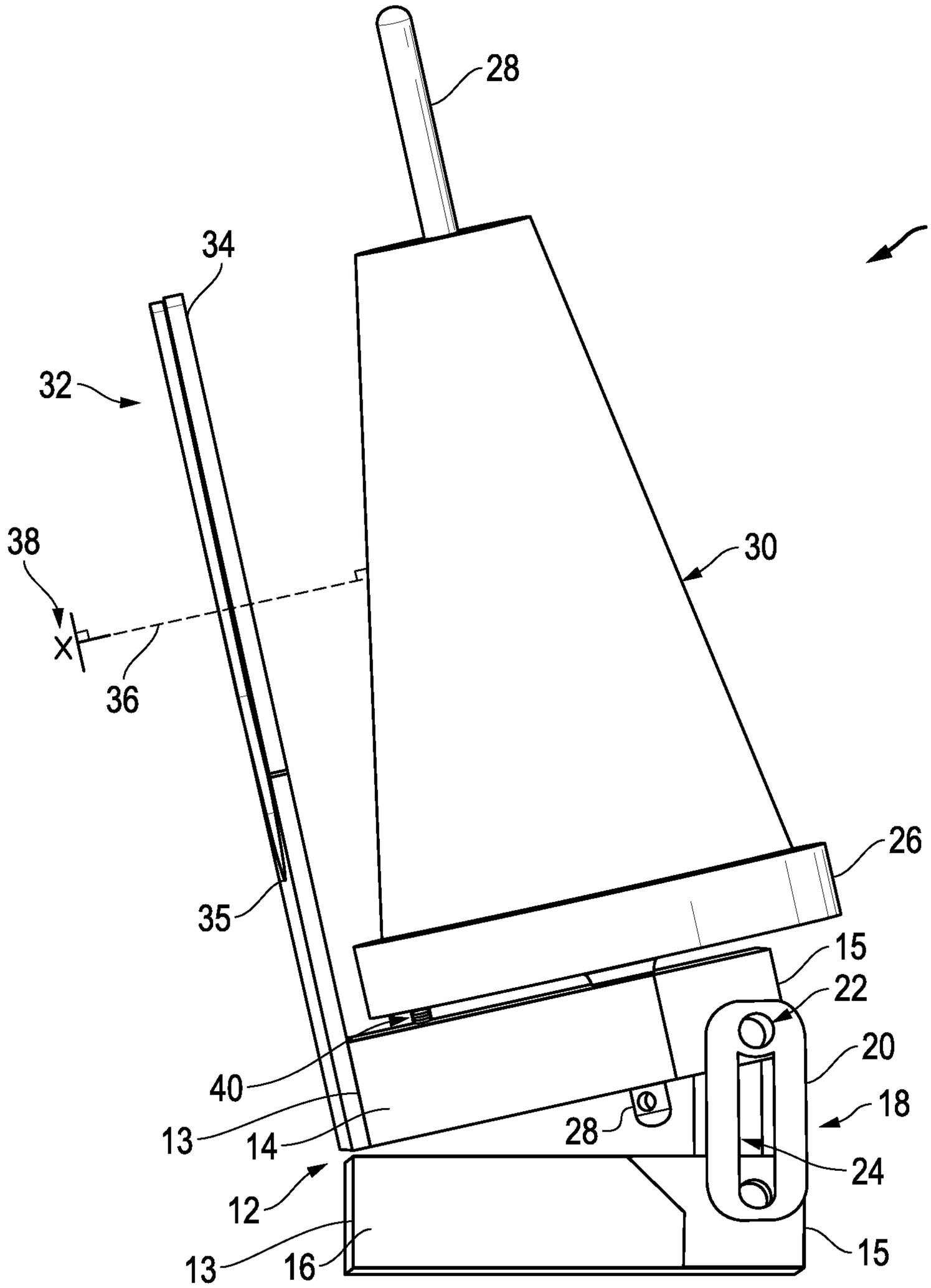

FIG. 2

QUICK SPINNER THREAD ALIGNMENT APPARATUS AND METHOD

CROSS REFERENCE TO RELATED APPLICATION

This application claims the benefit of previously filed U.S. provisional patent application No. 61/941,212 filed Feb. 18, 2014 for a "Quick Spinner Thread Alignment Apparatus and Method". The Applicant hereby claims the benefit of this provisional application under 35 U.S.C. §119. The entire content of this provisional application is incorporated herein by this reference.

FIELD OF THE INVENTION

This invention relates to a quick spinner thread alignment apparatus and method. In particular, in accordance with one embodiment, the invention relates to a quick spinner thread alignment apparatus consisting of a two part adjustable mounting block comprised of an upper block and a lower block. An angle adjustment device is connected to the upper block and the lower block where the angle adjustment device adjustably secures the upper block at selected angles relative to the lower block. A thread support disk is rotatably connected with the mounting block. A thread saver is connected with the mounting block. A thread pole is connected with the thread support disk and a brake is connected with the thread support disk and the mounting block.

BACKGROUND OF THE INVENTION

A problem exists with regard to the use of sewing and quilting machines. In use the machines require thread to be fed to an eyelet on the sewing machine. In larger machines it is common for the thread to be loaded on thread cones and the thread pulled off of the thread cone into the eyelet. The problem is that when the thread comes off of the thread cone, if it is not perpendicular to the thread cone, or nearly so, the thread will catch and kink and oftentimes break.

Thus, there is a need in the art for a thread alignment device that is adjustable such that thread leaving a thread spool can be directed perpendicular to the eyelet from multiple positions. There is also a need for such a device that prevents thread from kinking or getting caught in the device or with the machine it is used with.

It therefore is an object of this invention to provide a thread alignment device that supports a thread spool with thread in close proximity to a sewing machine eyelet that is adjustable so that the thread leaves the thread spool perpendicular to the thread spool on its way to the eyelet. Further it is an objective to provide a device that is freely and quickly spinning to enable the thread to be taken up as quickly as needed but that prevents over spinning of the thread spool and entanglement of the thread with it or other devices.

Therefore, according to one embodiment of the present invention a quick spinner thread alignment apparatus includes a two part adjustable mounting block comprised of an upper block and a lower block. An angle adjustment device is connected to the upper block and the lower block where the angle adjustment device adjustably secures the upper block at selected angles relative to the lower block. A thread support disk is rotatably connected with the mounting block. A thread saver is connected with the mounting block. A thread pole is connected with the thread support disk and a brake is connected with the thread support disk and the mounting block.

In one aspect, the upper block is angled upward from the lower block and in another aspect the upper block is angled downward toward the lower block.

In another aspect, the thread saver includes a thread stop. In a further aspect, the thread saver is 'U' shaped with a pair of arms where the pair of arms extend upwardly and apart from a common bottom and where the common bottom forms a thread stop.

In one aspect, the brake is connected between the thread support disk and the upper mounting block. In another aspect, the brake is a spring.

In a further aspect, the angle adjustment device includes a slide with a first end and a second end and a slot in between the first end and the second end. In another aspect, the first end is connected with the upper block and the second end is connected with the lower block such that the connection with the lower block is through the slot.

In one aspect, the invention further includes a magnet connected with the quick spinner thread alignment apparatus where the magnet is connectable with other devices.

According to another embodiment, a quick spinner thread alignment apparatus consists of a two part adjustable mounting block comprised of an upper block with a front and a back and a lower block with a front and a back. An angle adjustment device is connected to the back of the upper block and the lower block where the angle adjustment device adjustably secures the upper block at selected angles relative to the lower block and where the angle adjustment device includes a slide with a first end and a second end and a slot in between the first end and the second end. A thread support disk is rotatably connected with the mounting block. A forked thread saver, with a pair of spaced apart arms, is connected with the front of the upper block. A thread pole is connected with the thread support disk and a brake is connected with the thread support disk and the mounting block.

In one aspect, the forked thread saver includes a thread stop. In another aspect, the forked thread saver is 'U' shaped where the pair of arms extend upwardly and apart from a common bottom and where the common bottom forms a thread stop and where the thread stop is located above the thread support disk.

In another aspect, the brake is connected between the thread support disk and the upper mounting block and in one aspect the brake is a spring.

In a further aspect of this embodiment, the first end of the slide is connected with the upper block and the second end is connected with the lower block such that the connection with the lower block is through the slot.

In one aspect, the front of the upper block is angled upward from the front of the lower block and in another aspect, the front of the upper block is angled downward toward the front of the lower block.

According to another embodiment, a quick spinner thread alignment method consists of:

a. providing a two part adjustable mounting block comprised of an upper block and a lower block; an angle adjustment device connected to the upper block and the lower block where the angle adjustment device adjustably secures the upper block at selected angles relative to the lower block; a thread support disk rotatably connected with the mounting block; a thread saver connected with the mounting block; a thread pole connected with the thread

support disk; and a brake connected with the thread support disk and the mounting block; and

b. connecting a thread cone with thread with the thread pole.

In another aspect, the method further includes adjusting the angle adjustment device and securing it in place such that thread from the thread spool feeds perpendicularly off of the thread spool past the thread saver and perpendicular to an eyelet of a sewing machine.

DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the present invention will become more fully apparent from the following detailed description of the preferred embodiment, the claims, and the accompanying drawings in which:

FIG. **1** is a side view of the quick spinner thread alignment apparatus shown in the up angle; and

FIG. **2** is a side view of the opposite side of the invention of FIG. **1** shown in the down angle.

DETAILED DESCRIPTION OF THE INVENTION

The preferred embodiment of the present invention is illustrated by way of example in FIGS. **1-2**. With specific reference to FIG. **1**, the quick spinner thread alignment apparatus **10** of the present invention includes a two part adjustable mounting block **12**. Two part adjustable mounting block **12** includes upper block **14** with a front **13** and a back **15** and lower block **16** also with a front **13** and a back **15**. Upper block **14** is connected with lower block **16** by angle adjustment device **18**. In one embodiment, angle adjustment device **18** is slide **20**, or a pair of slides **20** as shown, with one end **22** secured to the back **15** of upper block **14**, for example only, by a screw or the like (not shown). End **22** does not move up and down but may rotate when the screw is loosened. Slide **20** includes slot **24** into which another screw (not shown) is located and then that screw tightened into connection with the back **15** of lower block **16**. FIG. **1** shows angle adjustment device **18** adjusted such that the mounting block **12** is "angled up" as will be discussed more fully hereafter. That is, the front **13** of upper block **14** is angled upward and away from the front **13** of lower block **16**. Once the proper angle is determined for a particular situation, the screws (not shown) are tightened and the mounting block **12** is held in place.

A thread support disk **26** is rotatably connected with the mounting block **12**. By "rotatably connected" a disk that revolves is described. The mechanism for rotation is a matter of choice including bearings and the like. The thread support disk **26** freely revolves and rotates as thread **36** is pulled off of thread cone **30**. Thread support disk **26** supports thread cone pole **28** and rotates around with thread cone pole **28**. Thread cone pole **28** is secured to thread support disk **26** and holds thread cone **30** when thread cone **30** is placed onto thread cone pole **28** as shown.

A thread saver **32** is connected to upper block **14** on the end of upper block **14** opposite from the end **22** of slide **20**. In the Figures, thread saver **32** is connected to the front **13** of upper block **14**. In one embodiment, thread saver **32** is forked and includes a pair of upstanding and spaced apart arms or forks **34** through which thread **36** passes on its way from thread cone **30** to an eyelet **38** represented by an "X" on a sewing machine (not shown).

Thread saver **32** keeps thread **36** from becoming entangled with any part of the device. In particular, thread saver **32** supports thread **36** above the rotating thread support disk **26** and keeps the thread easily accessible during and in between uses. In this regard, forked thread saver **32** includes a thread stop **35**. In this case, thread stop **35** is the bottom of the "U" shaped forked thread saver **32** where the two forks **34** meet. Certainly, the invention includes the embodiment where the two forks **34** do not connect at the bottom and the thread stop **35** is a bar extending between the two forks **34**. Importantly, the thread stop **35** is located above rotating support disc **26**.

A brake **40** is connected between the thread support disk **26** and the upper block **14** of mounting block **12**. In one embodiment, brake **40** is, for example, a spring that exerts outward pressure onto thread support disk **26**. This pressure is slight so that thread support disk **26** freely rotates as the thread **36** is drawn off of thread cone **30**. However, this pressure by brake **40** is sufficient to prevent thread support disk **26** from continuing to rotate once thread is no longer being pulled off. Likewise, in the event the thread **36** breaks, the pressure of brake **40** stops the rotation. Thus, brake **40** may be a spring as shown or any other device that applies some resistance to rotation of support disk **26**.

FIG. **1** shows how the device is angled in the "up" position to an eyelet **38**. The preferred position that is achievable by use of the present invention is for the thread **36** to leave the thread cone **30** perpendicular to the thread cone **30** and aimed directly at eyelet **38** such that ii is received at eyelet **38** perpendicular to eyelet **38** as shown. The term "perpendicular" is given its ordinary meaning s yet it is understood that the term includes angles that are nearly perpendicular as well. It is understood that as the thread **36** is pulled off of thread cone **30**, it moves up and down the thread cone **30** and the angle will vary from perpendicular to the eyelet **38** to nearly perpendicular. Nonetheless, the present invention greatly improves the performance of the device as a result of its ability to align the thread **36** directly with the eyelet **38**. That is, by use of angle adjustment device **18**, the thread cone **30** is positioned such that the thread **36** is aimed directly at eyelet **38**, such that the thread **36** leaves the thread cone **30** perpendicular to the thread cone **30** and arrives perpendicular to eyelet **38**, and then secured in place.

In many cases it is difficult to secure a position of a device close to the eyelet **38**. Most of the sewing devices and machines are made of metal. In such a case, magnets **42** are connected to the bottom of lower block **16** and in this way quick spinner thread alignment apparatus **10** may be securely located close to the eyelet **38** and then adjusted.

Referring now to FIG. **2**, the same numbers identify the same elements as in FIG. **1**. FIG. **2** however, shows how by loosening screws (not shown) in angle adjustment device **18** slide(s) **20** can be used to extend the back **15** of upper block **14** away from the back **15** of lower block **16** such that the front **13** of upper block **14** can be tilted down toward the front **13** of lower block **16** in the case the eyelet **38** is below the device. This adjustment ability enables the user to position thread cone **30** at the preferred right angle such that the thread **36** directly to eyelet **38**, as illustrated, no matter where eyelet **38** is located.

By way of continued description, by comparing FIG. **1** with FIG. **2** it is understood that angle adjustment device **18** allows upper block **14** and lower block **16** to be moved relative to each other along slot **24** in slide **20**. In FIG. **1**, the backs **15** of upper block **14** and lower block **16** at the angle adjustment device **18** are slightly spaced apart sufficient to allow the front **13** of upper block **14** to be angled upward away from the front **13** of lower block **16** and toward eyelet **38**. When eyelet **38** is below the mounting block **12**, the

backs **15** of upper block **14** and lower block **16** are spaced far apart at opposite ends of slot **24** thereby allowing the front **13** of upper block **14** to angle down toward the front **12** of lower block **16** and toward eyelet **38**, as shown. In this regard, in one embodiment, the end of slide **20** connected with upper block **14** is not connected with slot **24**. As shown in the figures, the end of slide **20** connected with upper block **14** includes an opening, hole, through which a screw (not shown for clarity) is inserted. The screw can be tightened and un-tightened to allow upper block **14** to rotate and be secured in place at the desired angle but it does not otherwise move. At the other end of slide **20**, lower block **16** is connected with a screw (not shown) through slot **24**. When it is desired to angle the upper and lower blocks, the screw is loosened and then slides within slot **24** until the desired angle is reached and then tightened in place.

The description of the present embodiments of the invention has been presented for purposes of illustration, but is not intended to be exhaustive or to limit the invention to the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. As such, while the present invention has been disclosed in connection with an embodiment thereof, it should be understood that other embodiments may fall within the spirit and scope of the following claims of the invention.

What is claimed is:

1. A quick spinner thread alignment apparatus comprising:

a. a two part adjustable mounting block comprised of an upper block and a lower block;

b. an angle adjustment device connected to said upper block and said lower block wherein said angle adjustment device adjustably secures said upper block at selected angles relative to said lower block;

c. a thread support disk rotatably connected with the mounting block;

d. a thread saver connected with the mounting block;

e. a thread pole connected with the thread support disk; and

f. a brake connected with the thread support disk and the mounting block.

2. The apparatus of claim **1** wherein said upper block is angled upward from said lower block.

3. The apparatus of claim **1** wherein said upper block is angled downward toward said lower block.

4. The apparatus of claim **1** wherein said thread saver includes a thread stop.

5. The apparatus of claim **1** wherein said thread saver is 'U' shaped with a pair of arms and wherein said pair of arms extend upwardly and apart from a common bottom and wherein said common bottom forms a thread stop.

6. The apparatus of claim **1** wherein said brake is connected between said thread support disk and said upper mounting block.

7. The apparatus of claim **1** wherein said brake is a spring.

8. The apparatus of claim **1** wherein said angle adjustment device includes a slide with a first end and a second end and a slot in between said first end and said second end.

9. The apparatus of claim **8** wherein said first end is connected with the upper block and said second end is connected with said lower block such that the connection with the lower block is through said slot.

10. The apparatus of claim **1** further including a magnet connected with said quick spinner thread alignment apparatus and wherein said magnet is connectable with other devices.

11. A quick spinner thread alignment apparatus comprising:

a. a two part adjustable mounting block comprised of an upper block with a front and a back and a lower block with a front and a back;

b. an angle adjustment device connected to the back of said upper block and said lower block wherein said angle adjustment device adjustably secures said upper block at selected angles relative to said lower block wherein said angle adjustment device includes a slide with a first end and a second end and a slot in between said first end and said second end;

c. a thread support disk rotatably connected with the mounting block;

d. a forked thread saver, with a pair of spaced apart arms, connected with the front of said upper block;

e. a thread pole connected with the thread support disk; and

f. a brake connected with the thread support disk and the mounting block.

12. The apparatus of claim **11** wherein said forked thread saver includes a thread stop.

13. The apparatus of claim **11** wherein said forked thread saver is 'U' shaped wherein said pair of arms extend upwardly and apart from a common bottom and wherein said common bottom forms a thread stop wherein said thread stop is located above said thread support disk.

14. The apparatus of claim **11** wherein said brake is connected between said thread support disk and said upper mounting block.

15. The apparatus of claim **11** wherein said brake is a spring.

16. The apparatus of claim **11** wherein said first end of said slide is connected with the upper block and said second end is connected with said lower block such that the connection with the lower block is through said slot.

17. The apparatus of claim **11** wherein the front of said upper block is angled upward from said front of said lower block.

18. The apparatus of claim **11** wherein the front of said upper block is angled downward toward the front of said lower block.

19. A quick spinner thread alignment method comprising:

a. providing a two part adjustable mounting block comprised of an upper block and a lower block; an angle adjustment device connected to said upper block and said lower block wherein said angle adjustment device adjustably secures said upper block at selected angles relative to said lower block; a thread support disk rotatably connected with the mounting block; a thread saver connected with the mounting block; a thread pole connected with the thread support disk; and a brake connected with the thread support disk and the mounting block; and

b. connecting a thread cone with thread with said thread pole.

20. The method of claim **19** further including adjusting said angle adjustment device and securing it in place such that thread from said thread spool feeds perpendicularly off of said thread spool past said thread saver and perpendicular to an eyelet of a sewing machine.

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